

**SJA**

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# ***urgent***

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f a c s i m i l e

*To:* **Kay Pinkney**  
*Fax Number:* +1 (703) 3086642

*From:* **Christine Alvisurez**  
*Fax Number:* (310) 785-9558  
*Business Phone:* (310) 785-0140 ext. 307  
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*Pages:* 14  
*Date/Time:* 2/17/2005 12:24:32 PM  
*Subject:* Copy of IDS for 10/066,187

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Dear Mrs. Pinkney:

I have attached a copy of the unsigned IDS that was submitted to the examiner on 09/23/2004, which you requested. I hope that this copy is clearer to read. In the event that it is not, please let me know and I will do my best to give you a clearer copy.

Regards,

Christine Alvisurez  
Legal Assistant  
STATTLER, JOHANSEN, & ADELI LLP

10/666187

Based on PTO/SE/08 a &amp; b (05-03)

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Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				Application Number	10/066.187
				Filing Date	1/31/2002
				First Named Inventor	Steven Teig et al.
				Group Art Unit	2825
				Examiner Name	Tat, B.
Sheet	1	of	9	Attorney Docket Number	SPLX.P0133

U.S. PATENT APPLICATIONS						
Examiner Initials	Cite No.	U.S. Patent Application		Name of Patentee or Applicant of Cited Document	Date of Filing MM-DD-YYYY	Related Application Data if any
		Serial Number	Attorney Docket Number			
	1.	10/066,060	SPLX.P0072	Steven Teig	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	2.	10/066,160	SPLX.P0073	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	3.	10/066,095	SPLX.P0074	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	4.	10/066,047	SPLX.P0078	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	5.	10/061,641	SPLX.P0079	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	6.	10/066,094	SPLX.P0080	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	7.	10/076,121	SPLX.P0081	Steven Teig et al.	02-12-2002	Application with similar, but not identical, specification and drawing as the present application.
	8.	10/062,995	SPLX.P0105	Steven Teig et al.	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	9.	10/066,102	SPLX.P0106	Steven Teig	01-31-2002	Application filed on the same date, with same specification and drawings, but with different summary and abstract.
	10.	10/286,584	CDN.P0037	Steven Teig	10-31-2002	
	11.	10/335,087	CDN.P0038	Steven Teig et al.	12-31-2002	
	12.	10/335,239	CDN.P0039	Steven Teig et al.	12-31-2002	

Examiner Signature	Date Considered
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10/066187

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				Group Art Unit	2825
				Examiner Name	Tat, B.
Sheet	2	of	9	Attorney Docket Number	SPLX.P0133
<b>U.S. PATENT APPLICATIONS</b>					
	13.	10/335,086	CDN.P0040	Steven Teig et al.	12-31-2002

FOREIGN PATENT DOCUMENTS								
Examiner's Initials	Cite No.	Foreign Patent Document			Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	-6
		Office <sup>2</sup>	Number <sup>2</sup>	Kind Code (if known) <sup>2</sup>				
	14.	JP	11-296560		10-29-1999	Matsumoto et al.	with English translation of Abstract;	
	15.	JP	2000-082743		03-21-2000	Igarashi et al.	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
	16.	JP	64-15947		01-19-1989	Ouchi	with English translation of Abstract;	
	17.	JP	03-173471		07-26-1991	Tawada et al.	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
	18.	JP	04-000677		01-06-1992	Fujiwara et al.	with English translation of Abstract;	
	19.	JP	05-102305		04-23-1993	Sato	with Japanese Patent Office's English translation of Abstract; and with English translation of the application.	✓
	20.	JP	05-243379		09-21-1993	Kubota	with Japanese Patent Office's English translation of Abstract; and with English	✓

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				Examiner Name		Tat, B.	
Sheet	3	of	9	Attorney Docket Number		SPLX.P0133	
<b>FOREIGN PATENT DOCUMENTS</b>							
						translation of the application.	
21.	JP	07-086407		03-31-1995	Miura	with Japanese Patent Office's English translation of Abstract and with English translation of the application. ✓	
22.	JP	09-162279		06-20-1997	Yoshida	with Japanese Patent Office's English translation of Abstract and with English translation of the application. ✓	

<b>NON PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	23.	Chen, H.F. et al., A Faster Algorithm for Rubber-Band Equivalent Transformation for Planar VLSI Layouts, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. 15, No. 2, February 1996, pp. 217-227.	
	24.	Chip Model with Wiring Cost Map, August 1983, IBM Technical Disclosure Bulletin, vol. 26, issu. 3A, pp. 929-933	
	25.	Dayan, T. et al., Layer Assignment for Rubber Band Routing, UCSC-CRI-93-04, January 20, 1993.	
	26.	Dayan, T., Rubber-Band Based Topological Router, A Dissertation, UC Santa Cruz, June 1997.	
	27.	Dood, P. et al. A Two-Dimensional Topological Compactor with Octagonal Geometry, 28 <sup>th</sup> ACM/IEEE Design Automation Conference, pp 727-731, July 1991.	
	28.	Fujimura, K. et al, Homotopic Shape Deformation.	
	29.	Hama, T. et al., Curvilinear Detailed Routing Algorithm and its Extension to Wire-Spreading and Wire-Fattening.	

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			Group Art Unit	2825	
			Examiner Name	Tat, B.	
Sheet	4	of	9	Attorney Docket Number	SPLX.P0133

## NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>5</sup>
	30.	Hama, T. et al., Topological Routing Path Search Algorithm with Incremental Routability Test, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. 18, No. 2, February 1999, pp. 142-150.	
	31.	Kobayashi, K. et al., A New Interactive Analog Layout Methodology based on Rubber-Band Routing, UCSC-CRL-96-12, June 13, 1996.	
	32.	Lim, A. et al, A Fast Algorithm To Test Planar Topological Routability, Technical Report 94-012, pp. 1-16.	
	33.	Lu, Y., Dynamic Constrained Delaunay Triangulation and Application to Multichip Module Layout, A Thesis for Master of Science, UC Santa Cruz, December 1991.	
	34.	Maley, F.M., Testing Homotopic Routability Under Polygonal Wiring Rules, Algorithmica 1996, 15: 1-16.	
	35.	Morton, P. B. et al., An Efficient Sequential Quadratic Programming Formulation of Optimal Wire Spacing for Cross-Talk Noise Avoidance Routing, UCSC-CRL-99-05, March 10, 1999.	
	36.	NN71091316, Use of Relatively Diagonal And Rectangular Wiring Planes n Multilayer Packages, September 1971, IBM Technical Disclosure Bulletin, Vol. No. 14, Issue No. 4, pp. 1316-1317.	
	37.	Staepelaere, D. et al., Geometric Transformations for a Rubber-Band Sketch, A Thesis for a Master of Science in Computer Engineering, UCSC, September 1992.	
	38.	Staepelaere, D. et al., Surf: A Rubber-Band Routing System for Multichip Modules, pp 18-26, 1993.	
	39.	Su, J. et al., Post-Route Optimization for Improved Yield Using Rubber-Band Wiring Model, 1997 International Conference on Computer-Aided Design, pp 700-706, November 1997.	
	40.	Wei-Ming Dai, W. et al., Routability of a Rubber-Band Sketch. 28 <sup>th</sup> ACM-IEEE Design Automation Conference, 1991. pp. 45-65.	
	41.	Xing, Z. et al., A Minimum Cost Path Search Algorithm Through Tile Obstacles, slide presentation.	
	42.	Xing, Z. et al., Shortest Path Search Using Tiles and Piecewise Linear Cost Propagation, IEEE, 2002, pp.145-158.	
	43.	Xu, A More Efficient Distance Vector Routing Algorithm, UCSC-CRL-96-18, March 1997.	
	44.	Yu, M.-F. et al., Fast and Incremental Routability Check of a Topological Routing Using a Cut-Based Encoding, UCSC-CRL-97-07, April 14, 1997.	

Examiner Signature	Date Considered
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				Group Art Unit	2825
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Sheet	5	of	9	Attorney Docket Number	SPLX.P0133
<b>NON PATENT LITERATURE DOCUMENTS</b>					
	45.	Yu, M.-F. et al, Interchangeable Pin Routing with Application to Package Layout, UCSC-CRL-96-10, April 25, 1996.			
	46.	Yu, M.-F. et al., Pin Assignment and Routing on a Single-Layer Pin Grid Array, UCSC-CRL-95-15, February 24, 1995.			
	47.	Yu, M.-F. et al., Planar Interchangeable 2-Terminal Routing, UCSC-CRL-95-49, October 19, 1995.			
	48.	Yu, M.-F. et al., Single-Layer Fanout Routing and Routability Analysis for Ball Grid Arrays, UCSC-CRL-95-18, April 25, 1995.			
	49.	Ahuja, R. et al., Faster Algorithms for the Shortest Path Problem, Journal of the Association for Computing Machinery, vol. 37, No. 2, April 1990, pp. 213-223.			
	50.	Alexander, M. et al., Performance-Oriented Placement and Routing for field-programmable gate arrays, Proceedings of the European Design Automation Conference, pages 80-85, 1995.			
	51.	Alexander, M. et al., Placement and Routing for Performance-Oriented FPGA Layout, VLSI Design, Vol. 7, No. 1, 1998.			
	52.	Andou, H. et al., Automatic Routing Algorithm for VLSI, 22 <sup>nd</sup> Design Automation Conference, 1985, pp. 785-788.			
	53.	Bagga, J. et al., Internal, External, and Mixed Visibility Edges of Polygons.			
	54.	Berger, B. et al., Nearly Optimal Algorithms and Bounds for Multilayer Channel Routing, Journal of the Association for Computing Machinery, pp. 500-542, March 1995.			
	55.	Brady, L. et al., Channel Routing on a 60° Grid, extended abstract, pp.926-931.			
	56.	Carothers, K., A Method of Measuring Nets Routability for MCM's General Area Routing Problems, 1999, pp. 186-192.			
	57.	Chen, D.-S. et al., A Wire-Length Minimization Algorithm for Single-Layer Layouts			
	58.	Chen et al., Optimal Algorithms for Bubble Sort Based Non-Manhattan Channel Routing, May 1994, Computer-Aided Design of Integrated Circuits and Systems, IEEE Transactions Volume: 13 Issues, pp. 603-609.			
	59.	Chen, H., Routing L-Shaped Channels in Nonslicing-Structure Placement, 24 <sup>th</sup> ACM-IEEE Design Automation Conference, pp. 152-165, 1987.			

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<b>NON PATENT LITERATURE DOCUMENTS</b>					
60.	Chen, H. et al., Physical Planning of On-Chip Interconnect Architectures, 2002, IEEE, International Conference, pp. 30-35				
61.	Chen, S.-S. et al., A New Approach to the Ball Grid Array Package Routing, IEICE Trans. Fundamentals, Vol. E82-A, No. 11, November, 1999, pp. 2599-2608.				
62.	Cheng, K. et al., Manhattan or Non Manhattan? A Study of Alternative VLSI Routing Architectures, pp 47-52, 2000.				
63.	Cheng, K., Steiner Problem in Octilinear Routing Model, A Thesis submitted for the Degree of Master of Science, National University Singapore, 1995, pp. 1-122.				
64.	Chiang, C. et al., Wirability of Knock-Knee Layouts with 45° Wires, IEEE Transactions on Circuits and Systems, Vol. 38, Issue 6, pp 613-624, June 1991.				
65.	Cong, J. et al., Efficient Heuristics for the Minimum Shortest Path Steiner Arborrescence Problem with Applications to VLSI Physical Design, Cadence Design Systems, pp.88-95.				
66.	Cong, J. et al., Multilevel Approach to Full Chip Gridless Routing, 11/2001, IEEE, pp. 396-403.				
67.	Cong, J. et al., Performance Driven Multi-Layer General Routing for PCB/MCM Designs, UCLA Computer Science Department, 1998, pp. 356-361.				
68.	Das, S. et al., Channel Routing in Manhattan-Diagonal Model, 9 <sup>th</sup> International Conference on VLSI Design, January 1996, pp. 43-48.				
69.	Das, S. et al., Routing of L-Shaped Channels, Switchboxes and Staircases in Manhattan-Diagonal Model, pp. 65-70, January 1998.				
70.	Enbody, R. et al., Near-Optimal n-Layer Channel Routing, 23 <sup>rd</sup> Design Automation Conference, 1986, pp. 708-714.				
71.	Finch, A.C. et al., A Method for Gridless Routing of Printed Circuit Boards, 22 <sup>nd</sup> Design Automation Conference, 1985 ACM, pp. 509-515.				
72.	Gao, S. et al., Channel Routing of Multiterminal Nets, Journal of the Association for Computing Machinery, Vol. 41, No. 4, July 1994, pp. 791-818.				
73.	Gao, T. et al., Minimum Crosstalk Channel Routing, pp. 692-696, 1993 IEEE.				
74.	Gao, T. et al., Minimum Crosstalk Switchbox Routing, pp. 610-615, 1994 ACM				

Examiner Signature		Date Considered	
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10/066187

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Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				Application Number	10/066,187
				Filing Date	1/31/2002
				First Named Inventor	Steven Teig et al.
				Group Art Unit	2825
				Examiner Name	Tat, B.
Sheet	7	of	9	Attorney Docket Number	SPLX.P0133
<b>NON PATENT LITERATURE DOCUMENTS</b>					
	75.	Gonzalez, T. et al., A Linear Time-Algorithm for Optimal Routing, Journal of the Association for Computing Machinery, vol. 35, No. 4, October 1988, pp.810-831.			
	76.	Guibas, L. et al., Optimal Shortest Path Queries in a Simple Polygon, 1987 ACM, pp.50-63.			
	77.	Hachtel, G.D. et al., Linear Complexity Algorithms for Hierarchical Routing, 1/89, IEEE pp 64-80			
	78.	Hershberger, J., Efficient Breakout Routing in Printed Circuit Boards, Computational Geometry, 1997, ACM, pp. 460-462.			
	79.	Hershberger, J., Finding the Visibility Graph of a Simple Polygon in Time Proportional to its Size. Preliminary Version, 1987 ACM, pp. 11-20.			
	80.	Hightower, D., A Solution to Line-Routing Problems on the Continuous Plane, Bell Laboratories, Inc., pp. 11-34.			
	81.	Iso, N. et al., Efficient Routability Checking for Global Wires in Planar Layouts, IEICE Trans. Fundamentals, Vol.E80-A, No. 10 October 1997, pp. 1878-1882.			
	82.	Khoo, K. et al., An Efficient Multilayer MCM Router Based on Four-Via Routing, 30 <sup>th</sup> ACM/IEEE Design Automation Conference, 1993, pp. 590-595.			
	83.	Ladage, L. et al., Resistance Extraction Using a Routing Algorithm, 30 <sup>th</sup> ACM/IEEE Design Automation Conference, 1993, pp. 38-42.			
	84.	Leach, G., Improving Worst-case Optimal Delaunay Triangulation Algorithms, Department of Computer Science, June 15, 1992, pp. 1-7.			
	85.	Leiserson, C. et al., Algorithms for Routing and Testing Routability of Planar VLSI Layouts, pp. 69-78, May 1985.			
	86.	Lillis, J. et al., New Performance Driven Routing Techniques With Explicit Area/Delay Tradeoff and Simultaneous Wire Sizing, 33 <sup>rd</sup> Design Automation Conference, 1996.			
	87.	Lipski, W. et al., A Unified Approach to Layout Wirability, Mathematical Systems Theory, 1987, pp. 189-203.			
	88.	Lodi, E. et al., A 2d Channel Router for the Diagonal Model, pp. 111-125, April 1991.			
	89.	Lodi, E. et al., A Preliminary Study of a Diagonal Channel-Routing Model, Algorithmica, 1989, pp.585-597.			

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--------------------	-----------------

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)			Filing Date	1/31/2002	
			First Named Inventor	Steven Teig et al.	
			Group Art Unit	2825	
			Examiner Name	Tat, B.	
Sheet	8	of	9	Attorney Docket Number	SPLX.P0133

**NON PATENT LITERATURE DOCUMENTS**

90.	Lodi, E. et al., Lecture Notes in Computer Science, A 4d Channel router for a two layer diagonal model, pp. 464-476, July 1988.
91.	Lodi, E. et al., Routing in Times Square Mode, pp. 41-48, June 1990
92.	Lodi, E. et al., Routing Multiterminal Nets in a Diagonal Model, pp. 899-902, 1988.
93.	Murooka, T. et al., Simplified Routing Procedure for a CAD-Verified FPGA, IEICE Trans. Fundamentals, Vol. E82-A, No. 11 November 1999, pp. 2440-2447.
94.	Naclerio, N. et al., Via Minimization for Gridless Layouts, 24 <sup>th</sup> ACM/IEEE Design Automation Conference, 1987, pp.159-165.
95.	Nam, G. et al, Satisfiability-Based Layout Revisited: Detailed Routing of Complex FPGAs Via Search-Based Boolean SAT, 1999, pp. 167-175.
96.	Nestor, J. A New Look at Hardware Maze Routing, Proceedings of the 12 <sup>th</sup> ACM Symposium on Great Lakes Symposium on VLSI, pp 142-147, April 2002.
97.	Ng, C., A "Gridless" Variable-Width Channel Router for Macro Cell Design, 24 <sup>th</sup> ACM/IEEE Design Automation Conference, 1987, pp. 633-636.
98.	Olaverri, A.G. et al., On the Minimum Size of Visibility Graphs.
99.	Overtone, G., EDA Underwriter 2 Finding Space in a Multi-Layer Board, Electronic Engineering, Morgan-Grampian LTD, vol. 67, no. 819, pp 29-30.
100.	Pocchiola, M., Computing the Visibility Graph via Pseudo-Triangulations, 11 <sup>th</sup> Computational Geometry, Vancouver, Canada, 1995 ACM, pp. 248-257.
101.	Powers, K. et al., The 60° Grid: Routing Channels in Width d/square root 3, VLSI, 1991, Proceedings., First Great Lakes Symposium on Kalamazoo, MI, USA, pp 214-291, March 1991.
102.	Royle, J. et al., Geometric Compaction in One Dimension for Channel Routing, 24 <sup>th</sup> ACM/IEEE Design Automation Conference, 1987, pp 140-145.
103.	Schiele, W. et al., A Gridless Router for Industrial Design Rule, 27 <sup>th</sup> ACM-IEEE Design Automation Conference, pp. 626-631, 1990.
104.	Sekiyama, Y. et al., Timing-Oriented Routers for PCB Layout Design of High-Performance Computers, International Conference on Computer Aided Design, pp 332-335, November 1991.

Examiner Signature	Date Considered
--------------------	-----------------

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				Examiner Name	Tat, B.
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<b>NON PATENT LITERATURE DOCUMENTS</b>					
	105.	Soukup, J. et al., Maze Router Without a Grid Map, IEEE, 1992, pp. 382-385.			
	106.	Takashima, Y. et al, Routability of FPGAs with Extremal Switch-Block Structures, IEICE Trans. Fundamentals, vol. E81-A, No. 5, May 1998, pp. 850-856.			
	107.	Teig, S. The X Architecture: Not your Father's Diagonal Wiring, International Workshop on System Level Interconnect Prediction, pp. 33-37, April 2002.			
	108.	Thakur, S. et al., Algorithms for a Switch Module Routing Problem, 1994, pp. 265-270.			
	109.	Theune, D. et al., HERO: Hierarchical EMC-constrained routing, 11/1992, IEEE pp 468-472.			
	110.	Tollis, I. Techniques for Wiring in Non-Square Grids, pp. 66-69, May 1989.			
	111.	Urrutia, J., On the Number of Internal and External Visibility Edges of Polygons, Department of CS, University of Ottawa, ON, Canada, February 11, 1997.			
	112.	Wang, D., Novel Routing Schemes for IC Layout, Part I: Two-Layer Channel Routing, 28 <sup>th</sup> ACM/IEEE Automation Conference, 1991, pp.49-53.			
	113.	Yan et al., Three-Layer Bubble-Sorting -Based Non-Manhattan Channel Routing, ACM Transactions on Design Automation of Electronic Systems, Vol. 5, No. 3, July 2000, pp.726-734.			
	114.	Zhou, H. et al., An Optimal Algorithm for River Routing with Crosstalk Constraints, 1996			
	115.	Zhou, H. et al., Optimal River Routing with Crosstalk Constraints, ACM Transactions on Design Automation of Electronic Systems, vol. 3, No. 3, July 1998, pp. 496-514.			

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Electronic Version v18

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Title of Invention	Method and apparatus for routing a set of nets																								
<div style="display: flex; justify-content: space-between;"> <div> <p>Application Number: 10/066187</p> <p>Confirmation Number: 5277</p> <p>First Named Applicant: Steven Teig</p> <p>Attorney Docket Number: SPLX.P0133</p> <p>Art Unit: 2825</p> <p>Examiner: Binh C. Tat</p> <p>Search string: ( 4615011 or 4782193 or 5633479 or 5634093 or 5635736 or 6128767 or 6219823 or 6226560 or 6262487 or 6295634 or 6436804 or 6490713 or 6546540 or 6645842 or 4673966 or 4855929 or 5360948 or 5375069 or 5532934 or 5578840 or 5618744 or 5636125 or 5637920 or 5650653 or 5657242 or 5663891 or 5717600 or 5723908 or 5742086 or 5757089 or 5757656 or 5777360 or 5811863 or 5822214 or 5838583 or 5859449 or 5889329 or 5889677 or 5898597 or 5914887 or 5973376 or 5980093 or 6035108 or 6038383 or 6058254 or 6067409 or 6068662 or 6088519 or 6111756 or 6123736 or 20020104061 or 20020100009 or 20020107711 or 20020182844 or 20030005399 or 20030188281 or 20010003843 or 20020174413 or 20030025205 or 20030121017 ).pn.</p> </div> <div style="text-align: right;"> <p>*10/066187*</p> </div> </div>																									
<p><b>US Patent Documents</b></p> <p>Note: Applicant is not required to submit a paper copy of cited US Patent Documents</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>init</th> <th>Cite.No.</th> <th>Patent No.</th> <th>Date</th> <th>Patentee</th> <th>Kind</th> <th>Class</th> <th>Subclass</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>4615011</td> <td>1986-09-30</td> <td>Linsker</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>2</td> <td>4782193</td> <td>1988-11-01</td> <td>Linsker</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass		1	4615011	1986-09-30	Linsker					2	4782193	1988-11-01	Linsker			
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	1	4615011	1986-09-30	Linsker																					
	2	4782193	1988-11-01	Linsker																					

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	3	5633479	1997-05-27	Hirano	
	4	5634093	1997-05-27	Ashida et al.	
	5	5635736	1997-06-03	Funaki et al.	
	6	6128767	2000-10-03	Chapman	
	7	6219823	2001-04-17	Hama et al.	B1
	8	6226560	2001-05-01	Hama et al.	B1
	9	6262487	2001-07-17	Igarashi et al.	B1
	10	6295634	2001-09-25	Matsumoto	B1
	11	6436804	2002-08-20	Igarashi et al.	B2
	12	6490713	2002-12-03	Matsumoto	B2
	13	6546540	2003-04-08	Igarashi et al.	B1
	14	6645842	2003-11-11	Igarashi et al.	B2
	15	4673966	1987-06-16	Shimoyama	
	16	4855929	1989-08-08	Nakajima	
	17	5360948	1994-11-01	Thornberg	
	18	5375069	1994-12-20	Satoh et al.	
	19	5532934	1996-07-02	Rostoker et al.	
	20	5578840	1996-11-26	Scepanovic et al.	
	21	5618744	1997-04-08	Suzuki et al.	
	22	5636125	1997-06-03	Rostoker et al.	
	23	5637920	1997-06-10	Loo	
	24	5650653	1997-07-22	Rostoker et al.	
	25	5657242	1997-08-12	Sekiyama et al.	
	26	5663891	1997-09-02	Bamji et al.	
	27	5717600	1998-02-10	Ishizuka	
	28	5723908	1998-03-03	Fuchida et al.	
	29	5742086	1998-04-21	Rostoker et al.	
	30	5757089	1998-05-26	Ishizuka	
	31	5757656	1998-05-26	Hershberger et al.	
	32	5777360	1998-07-07	Rostoker et al.	
	33	5811863	1998-09-22	Rostoker et al.	
	34	5822214	1998-10-13	Rostoker et al.	

	35	5838583	1998-11-17	Varadarajan et al.
	36	5859449	1999-01-12	Kobayashi et al.
	37	5889329	1999-03-30	Rostoker et al.
	38	5889677	1999-03-30	Yasuda et al.
	39	5898597	1999-04-27	Scepanovic et al.
	40	5914887	1999-06-22	Scepanovic et al.
	41	5973376	1999-10-26	Rostoker et al.
	42	5980093	1999-11-09	Jones et al.
	43	6035108	2000-03-07	Kikuchi
	44	6038383	2000-03-14	Young et al.
	45	6058254	2000-05-02	Scepanovic et al.
	46	6067409	2000-05-23	Scepanovic et al.
	47	6068662	2000-05-30	Scepanovic et al.
	48	6088519	2000-07-11	Koford
	49	6111756	2000-08-29	Moresco
	50	6123736	2000-09-26	Pavisc et al.

## US Published Applications

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init	Cite.No.	Pub. No.	Date	Applicant	Kind	Class	Subclass
	1	20020104061	2001-11-30	Xing et al.	A1		
	2	20020100009	2002-07-25	Xing et al.	A1		
	3	20020107711	2002-08-08	Xing et al.	A1		
	4	20020182844	2002-12-05	Igarashi et al.	A1		
	5	20030005399	2003-01-02	Igarashi et al.	A1		
	6	20030188281	2003-10-02	Xing	A1		
	7	20010003843	2001-06-14	Scepanovic et al.	A1		
	8	20020174413	2002-11-21	Tanaka	A1		
	9	20030025205	2003-02-06	Shively	A1		
	10	20030121017	2003-06-26	Andreev et al.	A1		

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